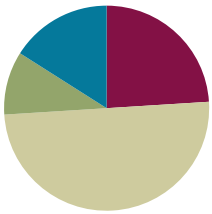
Lesson 31

Objective: Solve *add to with total unknown* and *put together with total unknown* problems with totals of 9 and 10.

Suggested Lesson Structure

Fluency Practice	(12 minutes)
Application Problem	(5 minutes)
Concept Development	(25 minutes)
Student Debrief	(8 minutes)
Total Time	**(50 minutes)**



Fluency Practice (12 minutes)

- Sprint: Core Fluency **K.OA.5** (9 minutes)
- Ready, Set, Add! **K.OA.5** (3 minutes)

Sprint: Core Fluency (9 minutes)

Materials: (S) Core Fluency Sprint (2 copies)

Note: During Topic F and for the remainder of the module, each topic includes an opportunity for review and mastery of the sums and differences with totals through 5 by means of the Core Fluency Sprints. Four Sprints are provided in this lesson, with Sprint A being the most simple addition fluency of the grade and Sprint D being the most complex (including addition and subtraction). Select the Sprint that is most appropriate for the class. To correct the work as a class, all students should take the same Sprint.

T: It's time for a Sprint! (Briefly recall previous Sprint preparation activities, and distribute Sprints facedown.) Take out your pencil and one crayon, any color. For this Sprint, you are going to subtract to find how many are left. (Demonstrate the first problem as needed.)

Continue to follow the Sprint procedure as outlined in Lesson 3. Have students work on the Sprint a second time. Continue to emphasize that the goal is simply to do better than the first time and celebrate improvement.

Ready, Set, Add! (3 minutes)

Note: In this activity, students test their mastery of addition facts within 5, and when the total is greater than 5, they are able to rely on the strategies of counting all or counting on with fingers.

1. Assign partners. Both students put one hand behind their back.
2. With the hand that is in view, they pump their fists two times as they say, "Ready, set," and then the third time, they show a number of fingers as they say, "Add!" (The motion is similar to rock, paper, scissors.)
3. Partners race to say an addition sentence that matches the number of fingers shown. The first partner (fastest) repeats the addition sentence for both to hear.
4. The second partner flips the addition sentence.
5. Repeat.

At first, have students use only one, two, or three fingers. As they demonstrate mastery, invite them to include four and five fingers as well.

Application Problem (5 minutes)

Materials: (S) Paper, crayons, pencil

5 children were playing soccer in the park. Draw the children. 4 more children came to play. Draw the new players. How many children were playing soccer? How did you know? Turn and talk to your partner about your answer. Do you agree?

Note: This practical example of an *add to with result unknown* problem serves as the anticipatory set for today's lesson.

Concept Development (25 minutes)

Materials: (S) 10 teddy bears or other counters, equation (Template), personal white board

Note: Today's problem-solving objective encourages students to work more independently. The lesson begins with whole-group work. With partners, students listen to and represent word problems through drawings, and finally, write and solve the related equations. Depending on the abilities of students, the problems can be modeled by the teacher if necessary. Alternatively, students who demonstrate ability can be encouraged to complete their work on the board as an example and explain their thinking to their peers.

Problem 1

T: (Write _____ + _____ = _____.) We are going to write more number sentences today. If you look at what I wrote on the board, what kind of number sentences do you think we will be talking about?

S: Add to number sentences. → Addition sentences!

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

To help English language learners understand the lesson and participate, point to the appropriate part of the blank number sentence on the board, and ask students, "What number should I put in the first blank? In the next blank? What about the blank after the equal sign?"

T: Do you remember what we put in the box in our lessons before?

S: How many altogether! → The mystery number. → The number we didn't know.

T: You are right! You have some counters on your desk. Listen to my story. 6 bears were walking in the forest. Show the bears with your counters.

T: 3 more bears came to walk with them. Show the new bears with your counters. How many bears were walking in the forest altogether?

S: Now we have 9 bears!

T: How do you know?

S: I counted them all. → I started at 6 and counted 3 more!

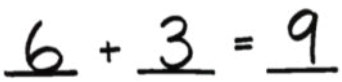
T: You are right. We started with 6 bears and added 3 more bears to make 9 bears altogether. How could we write a number sentence about the story? What number should I put in the first blank?

S: 6.

T: In the next blank?

S: 3.

T: What about the blank after the equal sign?



S: 9.

T: How did you know where each of the numbers belonged?

S: 6 and 3 were the parts. → We put the 9 in the blank after the equal sign because that was how many bears there were in all.

Problem 2

T: Let's make up another story about the bears. This time, there were 3 bears sleeping and 7 bears playing. Show your groups of bears with your counters. How many bears in all?

S: I have 10 bears.

T: Can you tell me a number sentence about these bears?

S: 3 bears and 7 bears make 10 bears. → 3 plus 7 equals 10.

T: I will write that on the board, too. Help me fill in my blanks. (Again, allow students to explain which number would go in each of the blanks and how they knew.)

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Scaffold the lesson for students working below grade level by giving them step-by-step directions. Be sure to ask students questions as they work to make sure they understand what they are doing.

Problem 3

MP.1

T: I'm going to let you try a problem with your partner now on your personal white board. Listen carefully to my story, and draw a picture about what happens. When you have finished your picture, fill in the number sentence to solve the problem.

T: Maggie had 4 pennies. Her mom gave her 5 more pennies. How many pennies does Maggie have now? Draw the pennies, and make a number sentence. (Allow time for drawing and discussion, circulating to ensure understanding during this new, more independent phase of problem solving.)

MP.1

T: How many pennies does Maggie have now? What was the number sentence?
S: 4 + 5 = 9. → She has 9 pennies now.

Problem 4

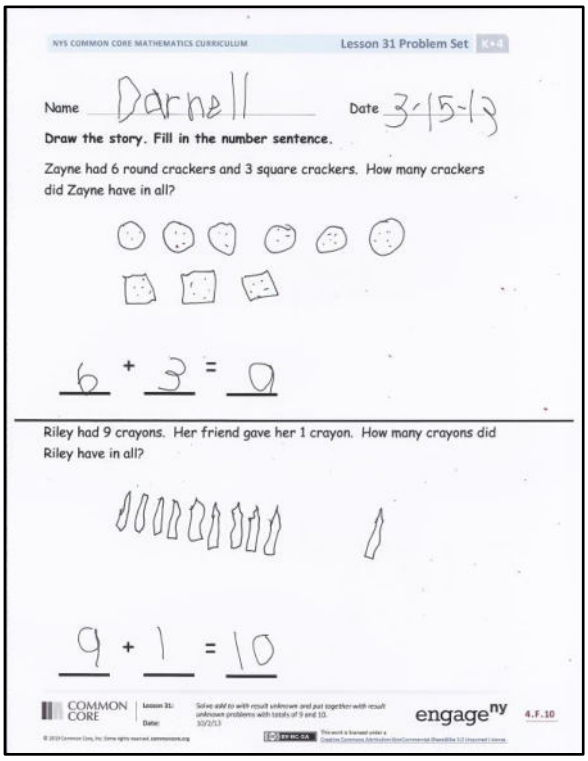
T: Great! Erase your board, and listen to the next story. Work with your partner to draw a picture about what you hear, and write the number sentence.
T: John had 2 circle magnets and 8 square magnets. How many magnets did he have altogether? (Circulate to ensure understanding and to repeat the problem for students who might need additional support. Depending on students' abilities, choose pairs of students to work on the board and model the problem for the class.)
T: Great work! What is our number sentence?
S: 2 + 8 = 10.
T: How many magnets did he have in all?
S: 10.
T: I'm going to give you some time to think up an addition story with your partner. Draw the picture, and write the number sentence. I will come around to hear your stories!

If time permits, allow students to create several *add to with result unknown* and *put together with total unknown* stories of their own. If students work on paper at this point, the results can be collected for a bulletin board or as part of a class book.

Problem Set (10 minutes)

Note: Depending on the abilities of the class, it may be appropriate to continue using the protocol above with students working independently. Read one problem at a time, and give students time to complete it, circulating to assist as necessary, prior to reading the next one. Early finishers can make up their own additional story problem drawings and number sentences on the back of their sheets.

Students should do their personal best to complete the Problem Set within the allotted time.


NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 31 Problem Set K•4

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Draw the story. Fill in the number sentence.

Zayne had 6 round crackers and 3 square crackers. How many crackers did Zayne have in all?

6 + 3 = 9

Riley had 9 crayons. Her friend gave her 1 crayon. How many crayons did Riley have in all?

9 + 1 = 10

COMMON CORE Lesson 31: Date: Solve *add to with result unknown* and *put together with result unknown* problems with totals of 9 and 10. engage^ny 4.F.10

Student Debrief (8 minutes)

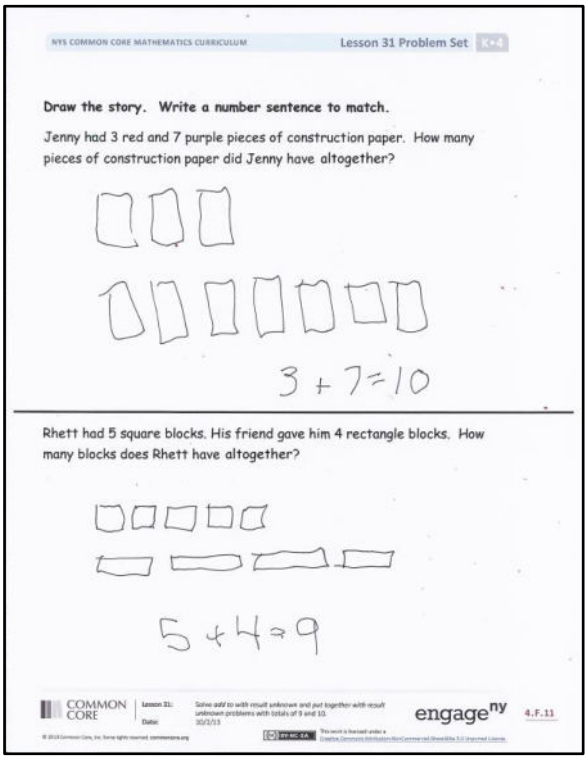
Lesson Objective: Solve *add to with total unknown* and *put together with total unknown* problems with totals of 9 and 10.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

Any combination of the questions below may be used to lead the discussion.

- How did the pictures you drew help you with your number sentences in the Problem Set?
- How did you decide where to put each number in the number sentences in your Problem Set? How did you know what numbers to put in the blanks?
- What do we call the types of number sentences that we were working on today? (Addition sentences.)
- Why is listening carefully very important when solving story problems?
- Were there lots of answers today, or was there always one answer? Were there different ways to get to an answer?
- In the Problem Set, did someone create his own number story he would like to share? (Listen to the story, and have students solve together.)


NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 31 Problem Set K•4

Draw the story. Write a number sentence to match.

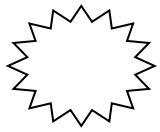
Jenny had 3 red and 7 purple pieces of construction paper. How many pieces of construction paper did Jenny have altogether?

3 + 7 = 10

Rhett had 5 square blocks. His friend gave him 4 rectangle blocks. How many blocks does Rhett have altogether?

5 + 4 = 9

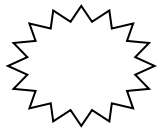
COMMON CORE Lesson 31: Date: Solve add to with result unknown and put together with result unknown problems with totals of 9 and 10. engage^ny 4.F.11

Number Correct: 

Name _____ Date _____

Write the missing number.

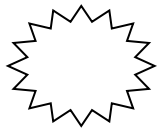
1.	2 + 1 = ☐	11.	☐ = 3 + 2
2.	1 + 1 = ☐	12.	1 + 3 = ☐
3.	1 + 4 = ☐	13.	☐ = 2 + 2
4.	3 + 1 = ☐	14.	☐ = 1 + 2
5.	2 + 2 = ☐	15.	1 + 4 = ☐
6.	2 + 3 = ☐	16.	☐ = 2 + 3
7.	1 + 2 = ☐	17.	☐ = 5 + 1
8.	4 + 1 = ☐	18.	5 + 2 = ☐
9.	3 + 2 = ☐	19.	1 + 0 = ☐
10.	1 + 3 = ☐	20.	5 + 0 = ☐

Number Correct: 

Name _____ Date _____

Write the missing number.

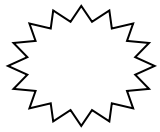
1.	2 - 1 = ☐	11.	☐ = 4 - 2
2.	4 - 1 = ☐	12.	5 - 3 = ☐
3.	5 - 1 = ☐	13.	☐ = 3 - 1
4.	3 - 1 = ☐	14.	☐ = 5 - 2
5.	3 - 2 = ☐	15.	4 - 1 = ☐
6.	4 - 2 = ☐	16.	☐ = 5 - 4
7.	5 - 3 = ☐	17.	☐ = 5 - 1
8.	5 - 2 = ☐	18.	6 - 1 = ☐
9.	4 - 3 = ☐	19.	1 - 0 = ☐
10.	5 - 4 = ☐	20.	5 - 5 = ☐

Number Correct: 

Name _____ Date _____

Write the missing number.

1.	2 + 1 = ☐	11.	3 + 2 = ☐
2.	2 - 1 = ☐	12.	3 - 2 = ☐
3.	3 + 1 = ☐	13.	4 + 0 = ☐
4.	3 - 1 = ☐	14.	4 - 0 = ☐
5.	4 + 1 = ☐	15.	5 + 0 = ☐
6.	4 - 1 = ☐	16.	5 - 0 = ☐
7.	1 + 1 = ☐	17.	5 - 5 = ☐
8.	1 - 1 = ☐	18.	4 + 1 = ☐
9.	2 + 2 = ☐	19.	5 - 4 = ☐
10.	2 - 2 = ☐	20.	5 - 1 = ☐

Number Correct: 

Name _____ Date _____

Write the missing number.

1.	2 + 1 = ☐	11.	☐ = 1 + 2
2.	4 + 1 = ☐	12.	5 + 0 = ☐
3.	5 - 1 = ☐	13.	☐ = 3 - 1
4.	3 + 1 = ☐	14.	☐ = 2 + 2
5.	3 + 2 = ☐	15.	4 - 1 = ☐
6.	4 - 2 = ☐	16.	☐ = 5 - 4
7.	5 - 3 = ☐	17.	☐ = 5 - 1
8.	5 - 2 = ☐	18.	3 + 0 = ☐
9.	2 + 3 = ☐	19.	1 - 0 = ☐
10.	5 - 4 = ☐	20.	5 - 5 = ☐

Name _____ Date _____

Draw the story. Fill in the number sentence.

Zayne had 6 round crackers and 3 square crackers. How many crackers did Zayne have in all?

____ + ____ = ____

Riley had 9 crayons. Her friend gave her 1 crayon. How many crayons did Riley have in all?

____ + ____ = ____

Draw the story. Write a number sentence to match.

Jenny had 3 red and 7 purple pieces of construction paper. How many pieces of construction paper did Jenny have altogether?

Rhett had 5 square blocks. His friend gave him 4 rectangle blocks. How many blocks did Rhett have altogether?

Name _____ Date _____

Draw the story. Fill in the number sentence.

Jake has 7 chocolate cookies and 2 sugar cookies. How many cookies does he have altogether?

_____ + _____ = _____

Jake's mother bought juice boxes. 4 were apple juice, and 5 were orange juice. How many juice boxes did she have in all?

_____ + _____ = _____

Draw the story. Write a number sentence to match.

Ryan had 5 celery sticks and 5 carrot sticks. How many veggie sticks did Ryan have altogether?

Draw an addition story, and write a number sentence to match it. Explain your work to an adult at home.

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